

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the International application:

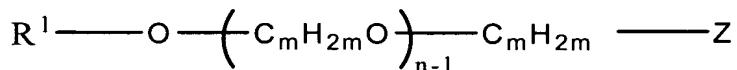
Listing of Claims:

1. (Currently amended) ~~The use of block copolymers which were prepared by polymerization of a poly(alkylene oxide) compound (A) with at least one ethylenically unsaturated monomer compound (B), as dispersants and/or superplasticizers for aqueous suspensions of solids; the suspension of solids containing hydraulic binders based on cement, lime, gypsum and anhydrite.~~

A method of dispersing aqueous suspensions of solids, the method comprising:

blending block copolymers with an aqueous suspension of the solids, the suspension of solids including hydraulic binders which include materials selected from the group consisting of cement, lime, gypsum, anhydrite and mixtures thereof, the block copolymers prepared by polymerization of a poly(alkylene oxide) compound with at least one ethylenically unsaturated monomer compound.

2. (Currently Amended) ~~The use method as claimed in claim 1, characterized in that wherein the block copolymers were copolymers are prepared by reacting a poly(alkylene oxide) compound (A) of the general formula (I)~~



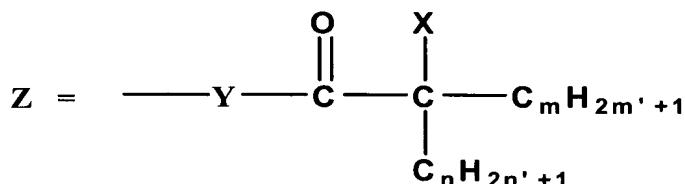
(I)

in which

R^1 = hydrogen, a $C_1 - C_{20}$ -alkyl radical, a cycloaliphatic $C_5 - C_{12}$ -cycloalkyl radical, an optionally substituted $C_6 - C_{14}$ -aryl radical;

$m = 2$ to 4 ;

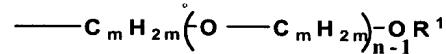
$n = 1$ to 250 ;



(III)

where Y = O or NR²

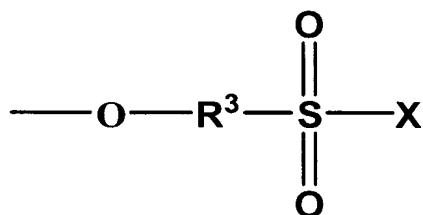
R² = H, a C₁-C₁₂-alkyl radical, a C₆-C₁₄-aryl radical, or



X = Cl or Br

m' = 1 to 4

n' = 0 to 2,

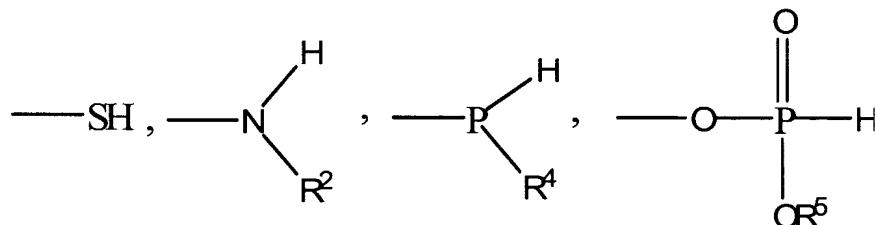


(IV)

where

R³ = an optionally substituted C₆-C₁₄-arylene radical

X = Cl, Br

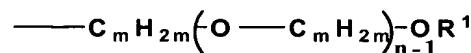


(V)

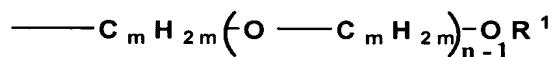
in which

R⁴ is H, a C₁-C₁₂ alkyl radical, a C₅-C₈-cycloalkyl radical, a C₆-C₁₄-aryl radical, optionally

substituted by hydroxyl, carboxyl or sulfo groups, or

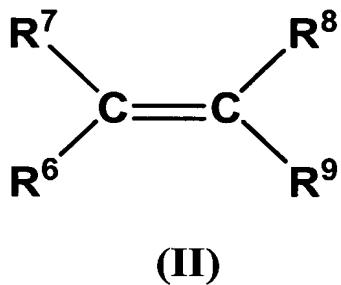


and R⁵ is C₁-C₁₂ alkyl, C₆-C₁₄-aryl, or



and R¹, R², m and n have the abovementioned meaning,

with an ethylenically unsaturated monomer compound (B) capable of free radical polymerization and of the general formula (II)



in which

R⁶ and R⁷ may be H, CH₃, COOH or salts thereof, COOR¹⁰, CONR¹⁰R¹⁰

R⁶ and R⁹ together may be O-CO-O

R⁸ may be H, CH₃ or -CH₂-COOR¹⁰

R⁹ may be COOR¹⁰, an optionally substituted C₆-C₁₄-aryl radical or OR¹¹

R¹⁰ may be H, C₁-C₁₂-alkyl, C₁-C₁₂-hydroxyalkyl,

R¹¹ may be acetyl, and

R¹, m and n have the abovementioned meaning.

3. (Currently amended) The use method as claimed in claim 1, wherein the reaction of the poly(alkylene oxide) compound (A) with the monomer compound component (B) ~~was~~ is carried out in the form of a free radical polymerization.

4. (Currently amended) The use method as claimed in claim 3, ~~characterized in that~~ wherein the reaction ~~was~~ is effected in the form of an "atom transfer radical polymerization" (ATRP).

5. (Currently amended) The use method as claimed in claim 2, wherein the aryl radicals for R¹ are also substituted by hydroxyl, carboxyl and sulfo groups.

6. (Currently amended) The use method as claimed in claim 2, wherein in formula (I), m is 2 or 3 and n is 5 to 250.

7. (Currently amended) The use method as claimed in claim 2, wherein ~~that~~ R² is hydrogen or C₁-C₂-alkyl.

8. (Currently amended) The use method as claimed in claim 2, wherein m' is 1 and n' is 0 or 1.

9. (Currently amended) The use method as claimed in claim 2, wherein the arylene radical R³ also has halo, hydroxyl, C₁-C₁₂-alkoxy, C₁-C₁₂-dialkylamino or carboxyl groups.

10. (Currently amended) The use method as claimed in claim 2, wherein R⁶ and R⁷ are H, R⁶ and R⁹ together are O-CO-O, R⁸ is H, CH₃ or CH₂COOR¹⁰ and R⁹ is COOR¹⁰[[,] or is a phenyl radical optionally substituted by hydroxyl, carboxyl or sulfo groups.

11. (Currently amended) The use method as claimed in claim 10, wherein R⁶ and R⁷ are H, R⁸ = H or CH₃, and R⁹ = ~~C~~OOR¹⁰ COOR¹⁰.

12. (Currently amended) The use method as claimed in claim 11, wherein R⁶ and R⁷ are H, R⁸ = H or CH₃, and R⁹ is COOH or salts thereof or COOR¹², where R¹² is tert-butyl or C₁-C₆-hydroxyalkyl.

13. (Currently amended) The use method as claimed in claim 2, wherein the reaction of the poly (alkylene oxide) compound (A) and the monomer compound (B) ~~was~~ is carried out in the presence of a inimer compound.

14. (Currently amended) The use method as claimed in claim 13, ~~characterized in that~~ wherein the inimer ~~compounds~~ compound used are those ~~is~~ which were prepared by esterification of hydroxy-functionalized monomers, such as, for example hydroxyethyl methacrylate (HEMA), with ATRP initiators, such as, for example, halopropionic acids.

15. (Currently amended) The ~~use method~~ as claimed in claim 13, wherein the inimer compound ~~used was obtained is prepared~~ by sulfochlorination of styrene.

16. (Currently amended) The ~~use method~~ as claimed in claim 1, wherein the reaction ~~was is~~ effected in the temperature range from 20 to 110°C.

17. (Currently amended) The ~~use method~~ as claimed in claim 1, wherein the block copolymers are used in an amount of 0.01 to 5% by weight, based on the suspension of solids.

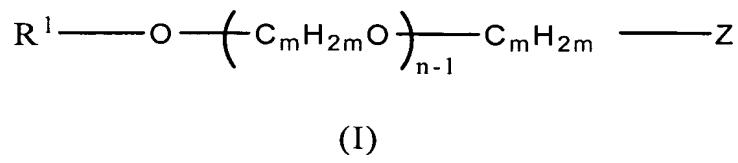
18. (Currently amended) The ~~use method~~ as claimed in claim 17, wherein the suspension of solids contains inorganic particles selected from the group consisting of crushed rock, silicate powder, chalk, clays, porcelain slip, talc, pigments and carbon black.

19. (Currently amended) The ~~use method~~ as claimed in claim 17, wherein the suspension of solids contains organic particles, such as, for example, plastics powder.

20. (New) A method of superplasticizing aqueous suspensions of solids, the method comprising:

blending block copolymers with an aqueous suspension of the solids to superplasticize the suspension of solids, the suspension of solids including hydraulic binders which include materials selected from the group consisting of cement, lime, gypsum, anhydrite and mixtures thereof, the block copolymers prepared by polymerization of a poly(alkylene oxide) compound with at least one ethylenically unsaturated monomer compound.

21. (New) The method as claimed in claim 20, wherein the block copolymers are prepared by reacting a poly(alkylene oxide) compound of the general formula (I)

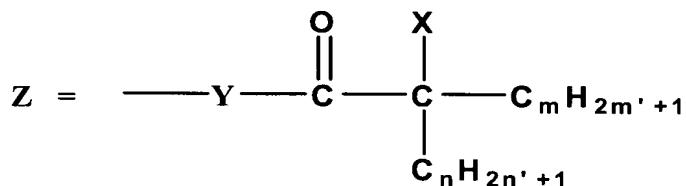


in which

R^1 = hydrogen, a C_1-C_{20} -alkyl radical, a cycloaliphatic C_5-C_{12} -cycloalkyl radical, an optionally substituted C_6-C_{14} -aryl radical;

$m = 2$ to 4 ;

$n = 1$ to 250 ;



(III)

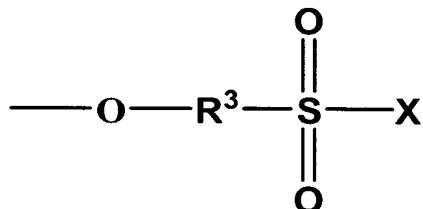
where $Y = O$ or NR^2

R^2 = H, a C_1-C_{12} -alkyl radical, a C_6-C_{14} -aryl radical, or $\begin{array}{c} -C_m H_{2m}(O-C_m H_{2m})_{n-1}-OR^1 \end{array}$

$X = Cl$ or Br

$m' = 1$ to 4

$n' = 0$ to 2 ,

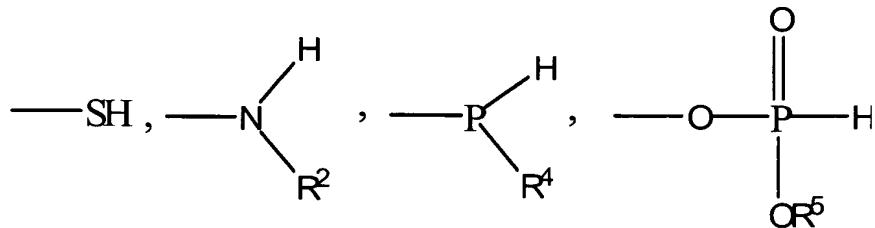


(IV)

where

R^3 = an optionally substituted C_6-C_{14} -arylene radical

$X = Cl, Br$

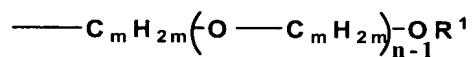


(V)

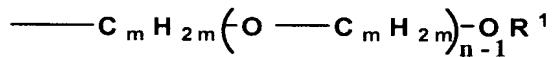
in which

R^4 is H, a C_1-C_{12} alkyl radical, a C_5-C_8 -cycloalkyl radical, a C_6-C_{14} -aryl radical, optionally

substituted by hydroxyl, carboxyl or sulfo groups, or

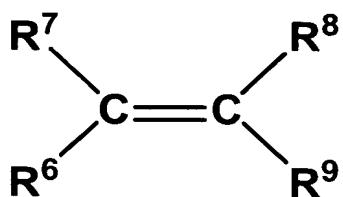


and R^5 is C_1-C_{12} alkyl, C_6-C_{14} -aryl, or



and $\text{R}^1, \text{R}^2, m$ and n have the abovementioned meaning,

with an ethylenically unsaturated monomer compound capable of free radical polymerization and of the general formula (II)



(II)

in which

R^6 and R^7 may be H, CH_3 , COOH or salts thereof, COOR^{10} , $\text{CONR}^{10}\text{R}^{10}$

R⁶ and R⁹ together may be O-CO-O

R⁸ may be H, CH₃ or -CH₂-COOR¹⁰

R⁹ may be COOR¹⁰, an optionally substituted C₆-C₁₄-aryl radical or OR¹¹

R¹⁰ may be H, C₁-C₁₂-alkyl, C₁-C₁₂-hydroxyalkyl,

R¹¹ may be acetyl, and

R¹, m and n have the abovementioned meaning.

22. (New) The method as claimed in claim 20 wherein the reaction of the poly(alkylene oxide) compound with the monomer compound is carried out in the form of a free radical polymerization.

23. (New) The method as claimed in claim 22, wherein the reaction is effected in the form of an "atom transfer radical polymerization" (ATRP).

24. (New) The method as claimed in claim 21, wherein the aryl radicals for R¹ are also substituted by hydroxyl, carboxyl and sulfo groups.

25. (New) The method as claimed in claim 21, wherein in formula (I), m is 2 or 3 and n is 5 to 250.

26. (New) The method as claimed in claim 21, wherein that R² is hydrogen or C₁-C₂-alkyl.

27. (New) The method as claimed in claim 21, wherein m' is 1 and n' is 0 or 1.

28. (New) The method as claimed in claim 21, wherein the arylene radical R³ also has halo, hydroxyl, C₁-C₁₂-alkoxy, C₁-C₁₂-dialkylamino or carboxyl groups.

29. (New) The method as claimed in claim 21, wherein R⁶ and R⁷ are H, R⁶ and R⁹ together are O-CO-O, R⁸ is H, CH₃ or CH₂COOR¹⁰ and R⁹ is COOR¹⁰ or is a phenyl radical optionally substituted by hydroxyl, carboxyl or sulfo groups.

30. (New) The method as claimed in claim 29, wherein R⁶ and R⁷ are H, R⁸ = H or CH₃ and R⁹ = COOR¹⁰.

31. (New) The method as claimed in claim 30, wherein R⁶ and R⁷ are H, R⁸ = H or CH₃ and R⁹ is COOH or salts thereof or COOR¹², where R¹² is tert-butyl or C₁-C₆-hydroxyalkyl.

32. (New) The method as claimed in claim 21, wherein the reaction of the poly (alkylene oxide) compound and the monomer compound is carried out in the presence of a inimer compound.

33. (New) The method as claimed in claim 32, wherein the inimer compound is prepared by esterification of hydroxy-functionalized monomers, such as, for example hydroxyethyl methacrylate (HEMA), with ATRP initiators, such as, for example, halopropionic acids.

34. (New) The method as claimed in claim 32, wherein the inimer compound is prepared by sulfochlorination of styrene.

35. (New) The method as claimed in claim 20, wherein the reaction is effected in the temperature range from 20 to 110°C.

36. (New) The method as claimed in claim 20, wherein the block copolymers are used in an amount of 0.01 to 5% by weight, based on the suspension of solids.

37. (New) The method as claimed in claim 36, wherein the suspension of solids contains inorganic particles selected from the group consisting of crushed rock, silicate powder, chalk, clays, porcelain slip, talc, pigments and carbon black.

38. (New) The method as claimed in claim 36, wherein the suspension of solids contains organic particles, such as, for example, plastics powder.